thermometer. & by drawing a small iron pipe into the ground to the requisite depth, say to 95 or at most to 100 feet. & by dropping the thermometer to the bottom of the hole in the pipe. Probably you might make use of the same photographic paper on which you are now recording the changes in atmospheric heat: in any case, the cost could not be very large, or the arrangements difficult. I shall have more to say about my own observations at Bath presently now I enclose myself with enclosing the particulars of four Curvatures at spring tides & neap tides, which particulars will I think serve to convince you that much is to be done in breaking new ground in this direction. Mrs C. B. Radcliffe.

London:

25, CAVENDISH SQUARE.

W.

11 June 1866

My dear Sir.

I should be very glad if I could induce you to widen your observations so as to comprehend the heat of the earth at a certain depth below that to which the heat of the surface is carried by conduction. The opposite is that the core of the earth has a heat of its own which, with the exception of a very small & slow loss by cooling, remains constant at any given depth: the fact is that there are tidal fluctuations in deep-seated subterranean

heat would not be so. planed by supposing that the heat of the surface waters in part by conduction, which are partly connected with polar & tidal action, & which may have something to do in causing the oceanic tides by producing a tidal wave in the land, & this fact about which I want to have further light is the outcome of certain observations & my own which have been carried out for some time past & which consist in taking the temperature of the water in one of the bottles with a thermometer & with the apparatus necessary for getting photographic tracings of the movements of the needle of the galvanometer connected therewith. You cannot imitate

this experiment to the letter but you may in the spirit. What I did was to assume that the water was heated by passing through parts of the earth which were equally hot. & which for that reason must be far below the part & which the heat of the surface would travel by conduction, even as long as two miles, & in fact, to take the temperature of the water was to take the temperature of the earth at a great depth below the surface. This you cannot do. but you may do what is substantially the same thing by taking a thermometer with the apparatus necessary for getting photographic tracings of the movement of the needle of the galvanometer connected

DSI

The Spring Tides at Port Moore.

	12	14	16	18	20	22	NOON	2	4	6	8	10	12
1885 (1)	High	and	Low	Water									
16 May	15.2						14.2					14.4	
15 Apr	11.5						11.7					11.8	
14 May	17.5						18.3					17.7	
8 Apr	8.4						7.7					7.3	
8 Oct	16						15.8					16.6	
1886													
4 Apr	10.4						9.7					8.4	
4 May	5						5.					4.1	
	12.02						11.77					11.43	
								mean	11.74				
1885 (2)	Low	and	High	Water									
16 May			14.4					14.6					
15 Apr			11.					11.8					
14 May			17.3					18.					
8 Apr			7.4					7.					
8 Oct			15.6					16.2					
1886								.					
4 Apr			10.6					9.3					
4 May			6.1					3.8					
			11.77					11.52					
								mean	11.64				

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(1) Mean Neap Tide + Th 1st Quarter.

	12	14	16	18	20	22	NOON	2	4	6	8	10	12
1884 (1)	High Land + Low Water.												
23 May				10.6						11.2			
24 Apr				15.8						7.7			
24 May				7.6						18.			
26 Apr				6.5						6.1			
26 Oct				15.8						16.7			
1885													
11 Apr				15.8						15.7			
11 May				.5						1.			
				11.80						12.54			
									mean	12.07			
1885 (2)	Low Land + High Water												
June 23	11.2					11.						10.8	
Apr 24	15.7					16.8							
May 24	17.5					17.9						17.9	
Apr 26	6.5					6.3						5.8	
Oct 26	15.7					16.3						16.9	
1886													
Apr 11	15.8					15.6						15.	
May 11	.5					.6						2.3	
	11.8					12.07						11.11	
									mean	11.66			

ISO

○ The Spring Tides at New Moon.

		12	14	16	18	20	22	NOON	2	4	6	8	10	12
1885	(1)	High Land ☆ Low Water.												
Mar 30	11.						11.4						11.8	
Apr 29	17.7						18.2						18.	
May 28	19.7						20.8						20.5	
Jun 24	4.6						4.2						3.8	
Oct 26	17.5						17.7						17.2	
1886														
April 15	13.						12.6						11.3	
May 18	6.						6.						6.	
	12.78						12.98						12.80	
										mean	12.85			
1885	(1)	Low Land ☆ High Water.												
Mar 30				10.9						11.8				
Apr 29				17.6						15.3				
May 28				19.6						20.7				
Jun 24				4.						4				
Oct 26				17.7						17.8				
1886														
April 15				13.1						12.				
May 16				6.1						5.7				
				12.71						12.42				
									mean	12.56				

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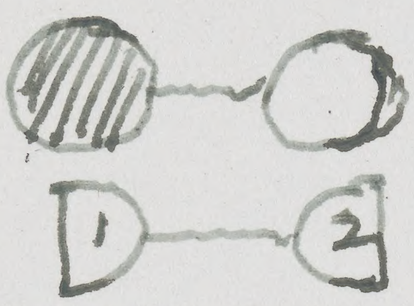
(2) The neap Tide of the 2nd Quarter

		12	14	16	18	20	22	NOON	2	4	6	8	10	12
1885	(1)	High Land & Low Water												
Apr 7					10.						10.8			
May 7					18.8						18.8			
Oct 1					.8						1.			
Oct 30					16.8						17.			
1886														
Apr 26					5.5						4.			
May 26					6.9						5.6			
					9.80						9.53			
										mean	9.66			
1885	(2)	Low Land & High Water												
Apr 7	10.3					10.4						10.5		
May 7	18.5					19.						18.3		
Oct 1	1.					1.						1.		
Oct 30	17.					16.7						17.3		
1886														
Apr 26	4.4					4.7						4.3		
May 26	6.5					6.4						5.3		
	9.61					9.70						9.40		
										mean	9.58			

DS



The Two Spring Tides together

The Two Neap Tides together

| | | |

DSI